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The Acheson-Lilienthal Report

The preparation and publication of the *Report on the International Control of Atomic Energy* made public by the Department of State on March 29 constitute an event of major significance. Secretary of State Byrnes writes in the Foreword that the document is presented as a basis for informed public discussion rather than as a statement of official policy. To this end we offer our readers a digest of the report.[1]

The problem of international control of the new and revolutionary power of atomic energy has now been transformed in the Acheson-Lilienthal Report from the level of recognized need to that of an integrated plan. After the Attlee-Truman-King Declaration in November, 1945, and the subsequent Moscow Declaration in December, it became clear that a UN commission on atomic energy would be established and that it would look to the United States for a lead on next steps. The Secretary of State therefore appointed on January 7, 1946, a committee composed of Dean Acheson, Vannevar Bush, James B. Conant, Major Gen. Leslie R. Groves and John J. McCloy, to study controls and safeguards. This committee in turn appointed on January 23 a board of consultants, composed of David E. Lilienthal of T.V.A., Chester I. Barnard of N. J. Bell Telephone Company, J. R. Oppenheimer, former head of the Los Alamos Laboratory, Charles A. Thomas of Mansanto Chemicals, and Harry A. Winne of General Electric.

This board devoted a month of intensive study to the technical problems of control, consulting top scientists in the pertinent fields. By equally intensive effort, the board was able to prepare in three weeks a unanimous report, backed by the recommendation of the Acheson Committee. The feat assumes added proportions when the difference in backgrounds of the participants is recalled. They undertook the study not expecting to reach full agreement, but found a completely common position after honest and painstaking examination of the alternatives. The 60-page document reflects the step-by-step evolution of the control plan. Merely as an intellectual accomplishment, it is an achievement of a high order.

The consultants had, as a framework for their study, the principles of the official declarations. The latter recognize that no adequate military defense against atomic weapons is possible and that no one country can continue to have a monopoly of such weapons. Therefore they call for international action to further the exchange of scientific information, to assure that atomic energy will be used only for peaceful purposes, to eliminate atomic and other weapons of mass destruction from national armaments, and to provide at every stage effective safeguards against the hazards of violation or evasion of controls. These are the foundations of the new plan.

Prerequisites of Policy

As their inquiry proceeded, the consultants became convinced that two methods of control would not work. The outlawry of atomic weapons would place too great a strain upon national good faith, if the pledged word were the only assurance against their manufacture and use. Fear of violations would pave the way for actual violations. Secondly, inspection alone would not provide security, if that were the only guaranty that national development of atomic energy would not include the making of bombs. Without other controls, inspection would be very difficult, the task would not attract the type of highly-trained scientist required, and the frictions resulting from extensive inspection would be likely to intensify rather than reduce international rivalries. Again, fear of violations would be an incentive to actual violations.

But by examining critically these two approaches to the problem of control, the consultants evolved six standards which any adequate plan must meet.

1. *The problem of enforcing controls must be of manageable proportions.* Conferences with nuclear physicists convinced the board of one important and hopeful fact, that "uranium is the only natural substance that can maintain a chain reaction." This fact immediately simplifies the problem of control, since it can now be defined as adequate supervision of uranium. Since thorium can be made explosive if combined with uranium, this metal needs to be included in the plan of supervision, to make it doubly sure. Furthermore, the highly concentrated deposits of the two elements occur only under "very special geologic conditions." This fact the consultants found to offer a starting point for a manageable form of control.

2. *The plans must provide unambiguous and reliable danger signals if controls are violated.* The difficulty with an inspection system as hitherto conceived is that the preparation of uranium for bombs is, in a large part of the process, the same as preparation for constructive ends. Therefore, the inspectors would never be sure whether bombs or power plants were being prepared. The consultants defined as dangerous all those activities which can lead to the making of bombs: mining and processing the

[1] Government Printing Office. Washington, D.C. 20 cents.

uranium ores, operating separation and plutonium plants capable of converting the ores to explosive materials, and, of course, running plants capable of making atomic bombs. If these dangerous activities could be made wholly illegal for nations and individuals, the board concluded, it would be easier to detect violations. Any action in these forbidden fields would be a clear danger signal.

3. *The plan must utilize the constructive impulses of men.* A keynote of the Report is that the control system must be built on man's hopes as well as his fears, if it is to endure. This is possible, the authors contend, because uranium can be made relatively harmless by "denaturing," that is, presumably by combining a non-explosive isotope of uranium with the explosive type in a manner making separation very difficult. Denatured uranium could be used safely, they maintain, in research and possibly in power plants. This fortunate fact would make it possible to permit constructive legal activities, while banning the dangerous and illegal activities, and thus enlist creative motives.

4. *The plan must make for international cooperation rather than rivalry.* The consultants argue that competition for the limited sources of supply, not to say for the development of atomic bombs, would create intolerable tensions in international relations. Such tensions would make inspection as a sole means of control unworkable. Therefore a workable plan must enable the nations to transcend their rivalries in a joint undertaking. The plan in short must be truly international in its control of dangerous phases of atomic development.

5. *The plan must be flexible to cope with possible new dangers.* While the board is convinced by scientific testimony that certain facts provide firm anchors for a control plan, it also points out that unforeseen perils might arise. Therefore the control agency would need to know as much if not more about new discoveries than any potential violator of the controls. It would have to keep in the van of atomic research.

6. *The plan must enable nations like the United States to be relatively secure if the controls break down.* The consultants agree that no plan can be completely foolproof and provide perfect security. Yet an acceptable plan must not enable a violating state to have the rest of the world at its mercy through gaining a monopoly of atomic weapons or facilities. This means a careful distribution of production plants to make as sure as possible that any violator would confront a greater array of potential atomic weapons, and have little or no more time in which to prepare them. Such a distribution would discourage violations. Moreover, the fact that it might require one to three years to build the necessary plants and to convert denatured unanium into explosive material would provide a major factor of safety against surprise attack. This would increase the relative security of complying states.

The Atomic Development Authority

By clarifying these requirements, the Lilienthal board was able to see the outlines of a satisfactory control system. An international agency, called for convenience the Atomic Development Authority, would be set up by the United Nations to control fully all dangerous phases of atomic development and to supervise the constructive aspects.

The Authority would first conduct a thorough geological survey of the world, to locate uranium and thorium deposits, as the beginning of a continuous survey program. It would own or lease all mines and processing plants. It would take over American separation and plutonium plants, and build new ones in various parts of the world, to establish a strategic balance. It would have full charge of denaturing the explosive material. It alone could legally carry on research in the destructive uses of atomic energy.

Thus, the A.D.A. would be given by charter a monopoly of the dangerous parts of atomic development. To maintain this monopoly, it would have trained inspectors to check on national activities, principally with regard to locating and mining uranium and thorium deposits. By focussing on a systematic and large-scale inspection of the raw materials, the consultants believe the Authority could prevent secret atomic rearmament with the least cause for international frictions.

As further protection there would be limited inspection in other phases of atomic development. This would be combined in large measure with the constructive functions of the Authority—a most important feature of the plan. The A.D.A. would license for national and private use safe quantities of denatured uranium for experimental and perhaps for power purposes. It would cooperate actively in the planning and operation of these projects—and incidentally would be in a position to keep tab on them. By furthering the constructive uses of atomic energy, the agency would foster the cooperation which is the only basic preventive of atomic war.

The agency itself, moreover, would carry on extensive research of a constructive nature. This too is an important feature, for only by such an approach, the consultants believe, would the Authority attract the able personnel required to make it a competent guardian of security and welfare. The international agency would need to be better informed than any other group, and to provide a research program ample to enlist the services of men who could maintain its scientific superiority. Only so would there be hope that dangerous new developments could be anticipated.

This international research program would not preclude extensive national efforts, except in the field of atomic weapons. The A.D.A. would keep in close touch with national researches, however, as part of its combined cooperation and inspection procedure.

Political Problems of Control

The consultants discuss only in general terms the political aspects of the plan, holding that international negotiation in the UN Commission should deal with these matters. Yet the essential political implications seem clear enough. The "truly international" Authority would involve an important delegation of national sovereignty in this new field. Not only would the operating personnel be recruited on an international basis, but the governing board would presumably operate by majority rule. Certainly a great-power veto in the Authority, once the special charter had been ratified, seems incompatible with essentials of the plan.

To make such a mechanism politically possible, the plan provides for a very specific charter which would make clear the duties and limitations of the Authority, the strategic balance of power agreed upon, and the degree of its accountability to the UN and individual states. The purpose would be to assure the A.D.A. full authority in its carefully defined field, and at the same time to provide assurances that the agency would not infringe upon the other sovereign rights of states. The design has been to make the required pooling of sovereignty as palatable as possible.

The question of sanctions for enforcement is another political problem not dealt with directly. It is suggested that the Authority might appeal to the International Court

of Justice to enlarge its right to inspect, if agreed-upon procedures seemed inadequate. But neither the Authority, nor presumably the International Court, would have power to back up a decision. The Report speaks of token UN guards at the production plants, but recognizes that these could be overwhelmed.

The only material sanction envisaged is the threat of collective action by other states against a power attempting to violate the controls. This coercive action would not include at the start atomic weapons since there would be no stockpiles. But if the military operations lasted several months, atomic weapons would no doubt be made and used. The threat of ultimate overwhelming retaliation with atomic bombs is the major deterrent to an open attempt at overthrow of the controls.

The Transition Period

The Acheson committee, in transmitting the Report, stresses the step-by-step character of transitional procedure and of disclosure of data still secret. The first stage, one of negotiation, would require an initial sharing by the United States of information needed to prove the workability of the plan. This might be a contribution to confidence, since it might conceivably shorten the American monopoly by a year. In the second stage, one of organizing the A.D.A., the rest of the knowledge, excepting details about the bomb, would need to be shared to permit the agency to operate. All states would have to permit the geological survey at this stage. The third stage would arrive when the A.D.A. was in a position to study atomic weapons in order to prevent their manufacture.

The American manufacture of atomic bombs would have to be stopped at some stage of this transition. Indeed, it seems clear that the present stockpile would have to be rendered harmless if the plan were fully adopted. Th Report does not say when the United States would have to stop making bombs. Yet it is hard to imagine other states without such bombs agreeing to a charter along the lines proposed if this country continues to prepare for atomic war.

There can be little ground for optimism about the present prospects for any plan of international control, in view of the mounting mutual distrust and fear between the Soviet Union and the Western states. Yet the Acheson-Lilienthal findings have greatly increased the possibilities of securing an operable and acceptable international program before it is too late.

Measures in Congress on Atomic Energy

Discussion of the domestic control of atomic energy has developed issues which are listed as follows by the April 1 *Washington Report* of the Legislative Committee of the Council for Social Action of the Congregational Churches.

"1. Shall the final determination of policy on the operation of atomic energy plants rest in a civilian or military commission?

"2. Can a policy of secrecy, resting upon unprecedented and arbitrary powers in the hands of a national government, bring security in the atomic age? Or is real security found through encouragement and exchange of scientific information together with effective international controls?

"3. Is this new power, developed with the resources and skills of the people, safer in public hands or can it be turned over to private ownership?

"4. What kind of commission and what policies will smooth the way for peace and international cooperation rather than accentuate fears and conflicts which will lead to atomic war?"

The general verdict seems to be for public control. Caution combined with a distrust of secrecy seems to be indicated in the Senate resolution urging action along the lines of the State Department's report reviewed above. The issues of civilian versus military control and the best type of organization and policy are represented in the bills now under consideration in the two Houses of Congress.

The McMahon Bill

The McMahon Bill (S. 1717) has been unanimously approved by the Special Senate Committee on Atomic Energy and, officially designated the Atomic Energy Act of 1946, is to be reported out to the Senate. According to the official summary, the Bill provides for virtually absolute "government control of the production, ownership and use of fissionable material and for programs of information, production, research and development. It establishes an administrative agency to exercise this control and promote this development subject to international agreements of the United States and to such further legislation as the Congress may enact. It is noted that legislation passed at this time will undoubtedly need reconsideration and change from time to time."

Organization.

Unprecedented powers, provided with checks and balances, are conferred upon an atomic energy commission composed of five civilians, with five-year tenure and $15,000 salaries. Four divisions—on research, production, engineering and military application—would be set up. Three committees would work with the commission: (1) a military liaison committee, assigned by the Secretaries of War and Navy, for reciprocal consultation on all matters relating to military application of atomic energy; any disagreement to be appealed to the President through the Secretaries of War and Navy; (2) a general scientific and technical advisory committee of nine civilians, appointed by the President, to advise on materials, production, research and development policies; and (3) a joint congressional committee to "make continuing studies of the activities of the commission, to reconsider bills introduced into Congress on the subject of atomic energy and to make reports to the Senate and the House of Representatives." This represents the compromise on the question of civilian versus military control which followed consideration of the amendment presented by Senator Vandenberg.

Activities.

The commission would be authorised to insure research on and development of atomic energy through its own agencies and others, which might be private or public as the commission may decide. The commission itself would own and operate "all facilities for the production of fissionable material." Management contracts would be permitted but private ownership and operation would be forbidden except as authorised by the commission. All right and title to source materials would be vested in the commission, which would compensate private owners. Distribution of all by-product materials would be controlled and all developmental work on military application. All utilization of fissionable material and manufacture of devices and equipment for such utilization would be subject to licensing by the commission. All United States property, resources and agencies devoted or related to atomic energy would be taken over.

The general powers of the commission would include the authority to appoint, hire and employ personnel, to use services and employes of other agencies, to buy and

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own property and erect buildings, to make studies and investigations, hold hearings and summon witnesses, and to establish safety and health regulations. Specific action of the commission may be exempted in advance by the President from the laws concerning contracts; otherwise the laws concerning audits would apply. The commission would have power to "exercise rights of eminent domain and condemnation and to purchase and use property prior to approval of its title by the Attorney General."

Safeguards and penalties.

Control of the dissemination of information regarding atomic energy would rest with the commission. Penalties are provided for violations which in the case of *intent* to injure the United States amount to $20,000 fine or 20 years' imprisonment or both, and, where there is *reason to believe* such injury would result, $10,000 fine or 10 years' imprisonment, or both. "The bill therefore establishes the outside limits of the offense, giving to the commission the power to reduce these boundaries by withdrawing items of information as conditions warrant. This recognizes the fact that the type of information to be safeguarded will necessarily change with time. These provisions are supplementary to all existing laws."

Safeguards in the matter of new inventions are included and the commission would be authorised to apply to the courts for enjoining or restraining orders or injunctions.

The May Bill

The Military Affairs Committee of the House of Representatives is almost evenly divided over the May Bill (H.R.4566), a War Department measure which has been criticised as opening the way to full military control of atomic energy This revision of the earlier draft has been reported out favorably. The drastic provisions are somewhat modified but atomic scientists generally maintain their objections to the Bill.

Organization.

A commission of nine persons would be appointed by the President, with the advice and consent of the Senate. They would receive $50 per day spent in meetings and compensation for travel, but these provisions would not apply to officers of the armed forces on active duty or to civilians holding other offices "under the United States" who might be appointed to the commission.

The commission would appoint an administrator at $15,000 and a deputy at $12,000 a year without regard to civil-service laws. It would have plenary supervision over the administrator and over all matters committed to itself. Any active or retired officer of the armed services, the Coast and Geodetic Survey or the Public Health Service might serve as a member or officer of the commission.

Activities.

The commission would be authorised "to conduct, or provide for the conducting by the administrator, of research and experimentation in the field of nuclear fission, the transmutation of atomic species, and closely related phenomena, and to proceed with the development of any and all processes or methods for the release of atomic energy, and for the exploitation and use thereof for military, industrial, scientific, or medical purposes." Colleges, universities, laboratories, hospitals, and "other governmental, non-profit, or private institutions equipped and staffed to conduct research and experimentation in this field," would be encouraged and aided. The commission and administrator might also construct, establish and operate "all necessary plants and facilities."

The commission would have power to license, and might grant licenses to a foreign government or a "person who is not under and within the jurisdiction of the United States," if the President approved. Such licenses might cover, among other things, "the development, exploitation and use of processes or methods for the release of atomic energy."

It would also be given wide powers to acquire and condemn the ores, metals, and other substances in the United States which are "peculiarly related" to the development of atomic energy. Such powers would also extend to "any substance" which in the future might be discovered to be "peculiarly related."

The commission would report annually to the President, who might omit any portion before transmitting the report to Congress, "in the interests of national defense and military security." Congress might "require the furnishing to it of the information so omitted."

Penalties for violation.

Varied penalties for violations of "security regulations" are prescribed, including dismissal from employment "in connection with activities" to be governed by the proposed Act, a fine of up to $300,000 or imprisonment up to 30 years, or both.

Senate Resolution S. 255

Senator Hugh B. Mitchell, of Washington, and others have offered a resolution in the U. S. Senate urging that "the security of the United States and of all nations requires prompt action on an international basis" and that such action be "undertaken immediately upon the basis of the [State Department's] report to the end that its provisions be adopted and a realistic hope of peace be substituted for the present universal fear of mass annihilation through atomic war." The resolution was referred to the Senate Atomic Committee and new hearings have been announced.

Among the reasons given in the resolution for its introduction were: that the State Department's report presented "a feasible method for the control of the production of atomic energy by all nations"; that it "does not entail the surrender of any atomic secrets until effective international control protecting all humanity is assured"; that the "available evidence indicates that prevention of atomic warfare is the only effective defense"; that "no nation can be secure when the scientists and industrialists of all nations are free to discover and make atomic bombs."

The Role of the Public

The method by which the McMahon bill reached its present form is important. In his April 12 broadcast Raymond Swing pointed out that "the education of the public and Congress is a joint enterprise and it also can be an affair of competition. . . . When experts of international renown appear at hearings, congressmen can learn, and so can the country, if the hearings are adequately reported." But "even with sketchy reporting the McMahon hearings gained attention . . . thanks to the ardent interest of many civic organizations." The *New York Times* reported that nearly 71,000 letters had been received by members of Congress endorsing the McMahon bill in principle, and only about a dozen letters in opposition to it. The May bill was opposed in more than 34,000 letters and the Vandenberg amendment in 24,800. "One can believe," says Mr. Swing, "that the public response has taught congressmen, and one hopes the men who draft bills in and for the War Department, something basic about American character."

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